

APPENDIX C: CATHODIC PROTECTION SURVEY COST INFORMATION

Preface.

Cathodic protection for buried USTs, partially buried or bunkered ASTs, and new buried pipelines (installed on or after August 16, 2002) is expressly required in the SPCC regulation (refer to § 112.8(c)(4), § 112.8(c)(5), and § 112.8(d)(1)), unless exterior coatings provide the requisite corrosion protection. The following table provides rough estimations of costs and survey times required to survey various sized cathodic protection systems.

Section 4.2.4.3 of the Spill Prevention Guidance Document (NFESC, 1998) provides background on cathodic protection concepts and types of systems. Section 4.2.10.3 discusses testing requirements and frequencies [<http://enviro.nfesc.navy.mil/ps/spillprev>].

Cathodic protection is often retrofitted on existing buried tanks and pipelines. The cost varies substantially based on the size, age, location, local environmental regulations, etc. A suggested range to base a cost estimate on is 5% - 20% of the cost of a similar new installation, although some retrofit installations may exceed this. Select a percentage from this range based on economy of scale and location. For example, use a lower percentage for large MILCON-sized facilities such as tank farms in generally lower cost or environmentally less strict areas; use a higher percentage for a small project such as a 1,000 gal UST in a generally higher cost or environmentally more strict area (e.g., California).

Cathodic Protection Survey Cost Information – Rough Cost and Survey Time Estimates (*NFESC*)

First Time / Full (Annual) Surveys	Survey Time	Remarks
<i>Fuel Farms</i>		
Very Large Fuel Tank Farms (12 - 20 tanks)	3 - 6 days	Estimate for 2-person team. Use high side estimate for large cut & cover tank farms requiring driving between tanks, if have extensive buried piping system, or if CP inoperable/unknown. Add mobilization time/costs, travel & per diems.
Large Fuel Tank Farms (8 - 12 tanks)	2 - 3 days	
Medium Fuel Tank Farms (5 - 8 tanks)	1 - 2 days	
Small Fuel Tank Farms (4 or less tanks)	0.5 - 1 day	Estimate for 1-person team unless 2-person team on-site for other testing. Add mobilization time/costs, travel & per diem.
<i>Piping Systems</i>		
Extensive (> 15 miles)	5+ days	Estimate for 2-person team. Use estimate for long piping system and add 1 day for each additional 5 mile increment. Add mobilization time/costs, travel & per diem.
Long (10 - 15 miles)	3 - 5 days	Estimate for 2-person team. Use high side estimate for rough or heavy overgrowth terrain, if have multiple piping systems along easement, or if CP inoperable/unknown. Add mobilization time/costs, travel & per diem.
Medium (5 - 10 miles)	3 - 5 days	
Short (< 5 miles)	0.5 - 2 days	Estimate for 1-person team unless 2-person team on-site for other testing. Use high side estimate for rough or heavy overgrowth terrain, if have multiple piping systems along easement, or if CP inoperable/unknown. Add mobilization time/costs, travel & per diem.
Close Interval Survey (special survey usually done only once per five to seven years)	1 - 2 miles/day	Estimate for 2-person team. Use low side estimate for rough or heavy overgrowth type terrain, if have multiple piping systems along easement, or if CP inoperable/unknown. Add mobilization time/costs, travel & per diem.
Periodic Maintenance Monitoring & Testing		
Survey Time		
Monthly / Bi-monthly Rectifier Inspections	0.25 - 1 hour/rectifier	Estimate for 1-person team unless 2-person team on-site for other testing. Use high side estimate if rectifier operating status unknown. Allow for travel time between rectifiers. Add mobilization time/costs, travel & per diem.

Quarterly / Semiannual Structure-to-Electrode Potential Tests	Survey Time	Remarks
Fuel Farms		
Very Large Fuel Tank Farms (12+ tanks)	2 - 3 days	Estimate for 2-person team. Use high side estimate for large cut & cover tank farms requiring driving between tanks, if have extensive buried piping system, or if CP inoperable/unknown. Add mobilization time/costs, travel & per diem.
Large Fuel Tank Farms (8 - 12 tanks)	1 - 2 days	
Medium Fuel Tank Farms (5 - 8 tanks)	1 - 2 days	Estimate for 1-person team unless 2-person team on-site for other testing. Add mobilization time/costs, travel & per diem.
Small Fuel Tank Farms (4 or less tanks)	0.5 - 1 day	
Piping Systems		
Extensive (> 15 miles)	5+ days	Estimate for 2-person team. Use estimate for long piping system and add 1 day for each additional 5 miles. Add mobilization time/costs, travel & per diem.
Long (10 - 15 miles)	1 - 2 days	Estimate for 2-person team. Use high side estimate for rough or heavy overgrowth terrain, if have multiple piping systems along easement, or if CP inoperable/unknown. Add mobilization time/costs, travel & per diem.
Medium (5 - 10 miles)	0.5 - 1 day	
Short (< 5 miles)	0.5 day	Estimate for 1-person team unless 2-person team on-site for other testing. Add mobilization time/costs, travel & per diem.

Reports	Preparation Time	Remarks
Very Large Tank Farms or Extensive Piping Systems	3 - 4 weeks	Estimate for 1 engineer with one week assistance from other engineer or technician on team, and possible effort for draftsperson. Allow 2 - 3 days for corrections if require review submittals prior to final submission. Include clerk/typist efforts and report printing costs.
Large Tank Farms or Long Piping Systems	2 - 3 weeks	Estimate for 1 engineer with 3 - 4 days assistance from other engineer or technician on team, and possible effort for draftsperson. Allow 2 - 3 days for corrections if require review submittals prior to final submission. Include clerk/typist efforts and report printing costs.
Medium Systems	1 - 2 weeks	Estimate for 1 engineer with 1 - 2 days assistance from other engineer or technician on team, and possible effort for draftsperson. Allow 1 - 2 days for corrections if require review submittals prior to final submission. Include clerk/typist efforts and report printing costs.
Short (< 5 miles)	3 - 5 days	Estimate for 1 engineer and possible effort for draftsperson. Allow 1 - 2 days for corrections if require review submittals prior to final submission. Include clerk/typist efforts and report printing costs.
Close Interval Survey (special survey usually done only once per five to seven years)	1 - 2 miles/day	Use report writing timeframes shown above.

Labor	Costs	Remarks
2 Person Team	\$1360/day or \$170/hour	Add costs for rental car, and 1 - 3 days for project management/firm principal efforts.
1 Person Team	\$760/day or \$95/hour	

